

general is the predication of all the members of a class of that which is intended to be predicated of only a part of the class. Thus, on page 101 of the present work we read, "all living things cannot use the solar energy directly." Obviously(?), if this were true, there would be no living things to pass judgment upon other living things! But after all, that might be an advantage.

A review of the zoölogical part of the book would not be germane to a botanical journal, but we have no doubt that this portion is characterized by the same scholarly treatment that has always marked the author's zoölogical contributions.

It is often mystifying to one that other people's views do not closely agree with his own, and it is specially difficult for the reviewer to understand why, to those institutions that have departments of both botany and zoölogy, and that plan to offer courses in "general biology," it does not seem perfectly obvious, in the interest of highest efficiency, that the course should be planned by the coöperation of the two departments, the study of plant forms to be conducted in and by the department of botany, and the study of animal forms only, by the department of zoölogy. But, as the Quaker said to his wife, "Most people are peculiar except thee and me, and thee is a little peculiar."

C. STUART GAGER

**Shreve's A Montane Rain-forest\***

Many writers have called attention to the commanding influence of the great trade winds on the distribution of the West Indian flora but the present book seems to be the first to critically analyze one of the most characteristic regions in the West Indies, the Blue Mountains of Jamaica, where a wonderful rain-forest has developed on the windward side of the mountains.

After giving a general account of the physical features of the region and a discussion of its climate, together with a list of the chief species found in the rain-forest, the author begins his major problem which has been the physiological reactions of individual plants to the environmental conditions. Among this intro-

\* Shreve, F. A montane rain-forest: A contribution to the physiological plant geography of Jamaica. Publication No. 199 of Carnegie Institution of Washington. pp. 1-110. pls. 1-29 + 18 figures. Price \$1.50. Issued 12 September, 1914.

ductory matter is the statement (p. 8) that the "dominant vegetation of the Blue Mountains is, in accordance with the climate, the evergreen broad-leaved forest, which is here of a type strongly temperate in its floristic make-up and in its vegetative characteristics." Many will be surprised at such a characterization, and not a few slow to accept. The list of species scarcely bears out the statement that the floristic make-up is of a type "strongly temperate."

A very interesting section of the book is devoted to the relation of physical conditions to habitat distinctions in the rain-forest where the great difference between the forest floor condition and that even a few feet in the air, is emphasized. To this is due the well known layers of vegetation, particularly epiphytic, in tropical forests. After a brief section on seasonal behavior of rain-forest vegetation, and another on the rate of growth in rain-forest plants, the author takes up the question of transpiration behavior of rain-forest plants, which occupies nearly half the book.

The author has sought to determine in this section of the book (*a*) daily march of the rate of water loss, (*b*) effect of high humidities and of darkness on the rate, (*c*) comparative amounts of stomatal and cuticular transpiration in the slightly cuticularized and thin-walled leaves of rain-forest plants, (*d*) the behavior of stomata as affecting the rate of transpiration, (*e*) comparative transpiration rate and transpiration behavior of different types . . . simultaneously measured, and (*b*) the daily march of the relative transpiration rate.

An elaborate series of experiments were conducted to determine these various points, and the book is a storehouse of figures and graphs without number on such subjects. An interesting by-product of this investigation is that the author was not able to confirm the results of Lloyd, some years since, in which the position was taken that the greatest transpiration is not synchronous with the greatest opening of stomata. Shreve's graphs show, on the whole, that when transpiration and evaporation are highest the stomata aperture is largest. One very useful result of the work is "the securing of simultaneous readings of transpiration and evaporation which makes possible also the

comparison of transpiration amounts and behaviors in plants of widely separated localities, with a basis of accuracy which removes this subject from the limbo of controversy into which botanical literature has sometimes seen it descend."

The care and thought evidenced throughout the book cannot blind us to a subject which it must force uppermost in the minds of all "ecologists," or "phytogeographers," or whatever we shall presently decide to call them. We have already *morphological* and *physiological* ecology, *physiographic* ecology, *floristic* and *ecological* plant geography, and now Dr. Shreve emphasizes the *physiological* plant geography of Jamaica. The obvious overlapping of terms, if not of concepts, must be a source of confusion to those who wonder what it is all about anyway, and have the right to be set straight by those most competent to do it. While this is neither an objection to Shreve's use of the term, for it was used, of course, by Schimper, nor a confession of obscurity in current ecological writing, it is a plea for that clearness of expression which shall make our terminology capable of but one interpretation, even by those who do not care to tread all the mazes of modern ecology.

NORMAN TAYLOR

**Trevena's Adventures among Wild Flowers\***

For the spirit of ultra-professionalism in botany, it would be difficult to find a more delightful antidote than Mr. John Trevena's "Adventures among Wild Flowers."\* Nowhere but in rural England could there have been written a book of this peculiar flavor of enjoyment of the country. The book seems to radiate the mellowed atmosphere of some cloistered rectory, far from the arena of modern botany and all the hurly-burly of everyday affairs.

For the professional anatomist among botanists the author has deep indignation. "He would snatch off the blossom, tear it into fragments, exposing its vitals, recite a mass of technical details concerning adaptation and fertilization, like some divine preaching upon predestination; discuss ovaries, pistils, inter-

\* Longmans, Green & Co., New York, and Edward Arnold, London. 1914. Price \$2.00.